

WHAT IS CLAIMED IS:

1. A device comprising:

a particle position constraining part, having inner surfaces;

an airflow producing part, producing an airflow within said inner surfaces to guide a particle within said inner surfaces; and

a detector, which detects a charge of a charged particle in said particle position constraining part, and produces a signal indicative of a charge and a size of a particle.

2. A device as in claim 1, wherein said detector produces an output signal indicative of a charge of said particle, and a movement of said particle, and determines size of said particle from said movement of said particle.

3. A device as in claim 1, wherein said airflow producing part includes an air pump.

4. A device as in claim 1, wherein said particle position constraining part includes a capillary tube.

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5. A device as in claim 1, wherein said detector includes a Faraday cage.

6. A device as in claim 5, wherein said detector includes a Faraday cage cylindrical electrode.

7. A device as in claim 5, further comprising a transistor, connected to said Faraday cage, and driven by an output of said Faraday cage to produce said signal.

8. A device as in claim 1, wherein said particle constraining part is a glass capillary.

9. A device as in claim 1, wherein said particle constraining part is a capillary having a diameter less than 10 mm.

10. A method, comprising:  
using airflow to guide a charged particle, having a charge greater than a specified amount, along a path;  
sensing a charge of the charged particle along the path; and  
producing a signal indicative of particle charge and particle size based on said sensing.

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11. A method as in claim 10, wherein said producing comprises analyzing a signal produced by said sensing to determine a size of the particle.

12. A method as in claim 10, wherein said using comprises confining said charged particle within a capillary.

13. A method as in claim 10, wherein said using comprises confining said charged particle within a capillary having a diameter less than ten mm and formed of glass.

14. A method as in claim 10, wherein said sensing comprises using a Faraday cage to sense charge of this charged particle as a function of time.

15. A method as in claim 14 wherein said using a Faraday cage comprises using a cylindrical electrode Faraday cage.

16. A method, comprising:  
forcing a charged particle to travel through a tube

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formed of a dielectric material; and

detecting a charge on said charged particle through said dielectric material.

17. A method as in claim 16, wherein said forcing comprises applying a known airflow to said charged particle.

18. A method as in claim 16, further comprising detecting a size of said charged particle based on a waveform detected by said detecting.

19. A method as in claim 16, wherein said dielectric capillary has a diameter less than one mm.

20. A method as in claim 19, wherein said dielectric capillary is formed of glass.

21. A method, comprising:

sliding a first smaller diameter tube of a dielectric material into a second, larger diameter tube which is a cylindrical sensing electrode;

forming a known airflow through said first smaller diameter tube, and causing charged particles to pass

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through said first smaller diameter tube; and

sensing passage of said charged particles using said  
second larger diameter tube, through said dielectric  
material.

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